From which immediately $x=2$, $y=-2$.

Dividing we have $x+2=-\dfrac{1}{2-y}$, or $y=\dfrac{2x+5}{x+2}$.

Substitute in (1), and obtain $x^3+2x^2+1=0$. Solve this by any of the above methods.

V. Add (1) and (2) and complete squares. Then

$$x^2+x+\tfrac{1}{4}+y^2+y+\tfrac{1}{4}=8+\tfrac{2}{4} \text{ or } (x+\tfrac{1}{2})^2+(y+\tfrac{1}{2})^2=\tfrac{25}{4}+\tfrac{9}{4}.$$

Whence, from the four possible corresponding values of x and y, we may pick out one set which satisfies the original system, namely $x=2$, $y=-2$.

Also solved by *GEO. R. BERRY.*

NOTE. The donor of this prize has acted as judge on the merits of the several solutions, and his decision is that the two published solutions are of equal merit. In accordance with this decision, the prize money has been equally divided between Miss Scheffer and Mr. Young. We might say that there has been only one solution sent in to the prize problem in Mechanics. This solution is defective. The problem is, therefore, open to all our contributors for solution. EDITOR F.

105. Proposed by CHARLES E. MYERS, Canton, O.

Solve for x the following: $a^{\log(a^{x^2})}=m^{\log(m)}$.

Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Science and Mathematics, Chester High School, Chester, Pa.; J. K. ELLWOOD, A. M., Colfax School, Pittsburg, Pa.; J. SCHEFFER, A. M., Hagerstown, Md.; COOPER D. SCHMITT, A. M., University of Tennessee, Knoxville, Tenn.; W. F. SHAW, Austin, Tex.; and ELMER SCHUYLER, B. Sc., Professor of German and Mathematics, Boys' High School, Reading, Pa.

$a^{\log(a^{x^2})}=m^{\log m}$ may be written $a^{x^2\log a}=m^{\log m}$.

$\therefore\ x^2(\log a)^2=(\log m)^2$.

$\therefore\ x=\pm(\log m/\log a)$.

GEOMETRY.

130. Proposed by B. F. FINKEL, A. M., M. Sc., Professor of Mathematics and Physics in Drury College, Springfield, Mo.

If the points x, y, z divide the strokes $c-b$, $a-c$, $b-a$, in the same ratio r, and the triangles x, y, z and a, b, c are similar, either $r=1$ or both triangles are equilateral. [From Harkness and Morley's *Introduction to the Theory of Functions*, page 26].

Solution by the PROPOSER.

Let x, y and z denote the points, dividing $c-b$, $a-c$, and $b-a$, respectively, in the given ratio r.

Then $x=\dfrac{c+br}{1+r}$, $y=\dfrac{a+cr}{1+r}$, and $z=\dfrac{b+ar}{1+r}$.

The condition that a, b, c, and x, y, z form similar triangles is

$$\begin{vmatrix} a & x & 1 \\ b & y & 1 \\ c & z & 1 \end{vmatrix}=0\ldots.(1).$$